

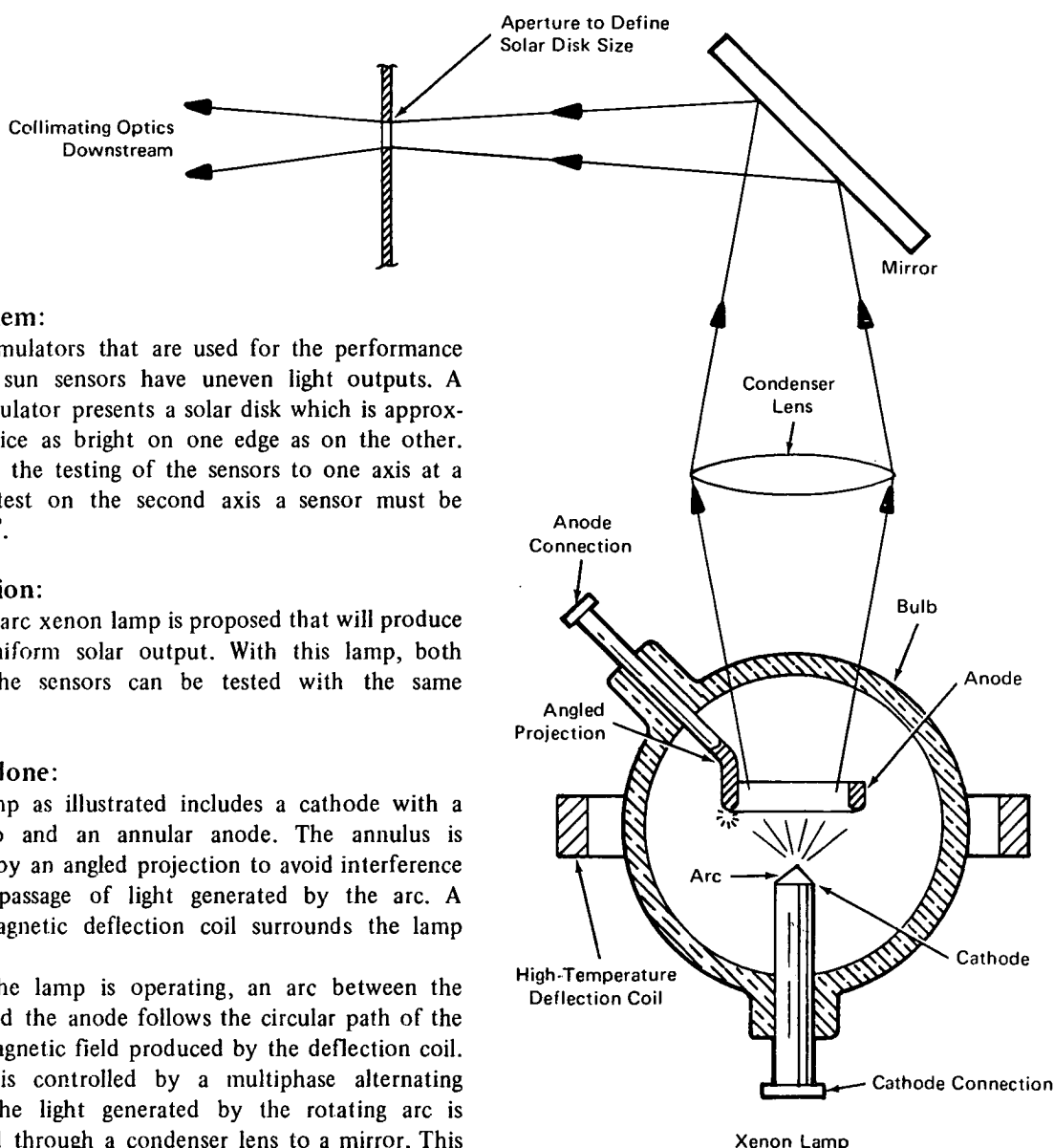
NASA TECH BRIEF

NASA Pasadena Office



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Improved Xenon Lamp for Solar Simulators: A Concept



The problem:

Solar simulators that are used for the performance testing of sun sensors have uneven light outputs. A typical simulator presents a solar disk which is approximately twice as bright on one edge as on the other. This limits the testing of the sensors to one axis at a time. To test on the second axis a sensor must be rotated 90°.

The solution:

A short-arc xenon lamp is proposed that will produce a more uniform solar output. With this lamp, both axes of the sensors can be tested with the same setup.

How it's done:

The lamp as illustrated includes a cathode with a conical tip and an annular anode. The annulus is supported by an angled projection to avoid interference with the passage of light generated by the arc. A circular magnetic deflection coil surrounds the lamp bulb.

When the lamp is operating, an arc between the cathode and the anode follows the circular path of the rotating magnetic field produced by the deflection coil. The coil is controlled by a multiphase alternating current. The light generated by the rotating arc is transmitted through a condenser lens to a mirror. This

(continued overleaf)

mirror directs the light through an aperture to the solar sensor. Collimating lenses are used before the light reaches the sensor. Because of the uniform intensity of the rotating arc, both axes of the sensor can be tested at the same time.

Patent status:

NASA has decided not to apply for a patent.

Source: Louis F. Schmidt of
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under contract to
NASA Pasadena Office
(NPO-13128)

Note:

Requests for further information may be directed to:

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